Week6 research note

This week I read one thesis called ”Multiple controller management in software defined networking” and learn about researches have been done on distributed controllers.

-In SDN, network devices become simple packet forwarding devices, while the “brain” or control logic is implemented in the controller. SDN controllers and forwarding devices communicate with each other by the southbound SDN interfaces. OpenFlow is one of the most common southbound SDN interfaces. The open networking foundation is responsible for standardizing the OpenFlow protocol.

- HyperFlow is logically centralized but physically distributed: it provides scalability while keeping the benefits of network control centralization. HyperFlow makes all the controllers share the same consistent network-wide view and locally serve requests without actively contacting any remote node.

-FlowVisor is a special purpose OpenFlow controller that acts as a transparent proxy between OpenFlow switches and multiple OpenFlow controllers. FlowVisor hosts multiple controllers in an OpenFlow network by slicing network resources and delegating one single controller to observe and control its own slice.

-Onix is a platform on top of which a network control plane can be implemented as a distributed system. The control platform handles state distribution by collecting information from the switches and distributing the appropriate control state to them, as well as coordinating the state among the various platform servers.

-Kandoo creates a two-level hierarchy for controllers: local controllers execute local applications as close as possible to switches, and a logically centralized root controller takes charge of applications that require network-wide state, and also acts as a mediator for any coordination required between local controllers.

-SiBF moves away from a centralized controller implementation and introduces an army of Rack Managers (RM), one per rack and acting as OpenFlow controllers. It is based on sharing the application state in a globally available data store.

-Devolved Controllers make one controller look after a portion of the network only, but all controllers together cover the whole network. When a controller is asked for a route, it responds with the topology data it has.